

PATENT SPECIFICATION

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(54) COFFEE MAKER

(71) We, N. V. PHILIPS' GLOBE-LAMPENFABRIEKEN, of Emmasingel 29, Eindhoven, Holland, a limited liability Company, organised and established under the laws of the Kingdom of the Netherlands, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a coffee maker of the filter type comprising a heating plate for a collecting vessel of a filter device and underneath the heating plate a pump chamber which is provided with a steam space, an outlet conduit connected to the pump chamber for conveying the water heated in the pump chamber to the filter device, and a common heating element for the heating plate and the pump chamber.

Such a coffee maker is described and claimed, for example, in the specification accompanying British Patent No. 1,283,013. In the present specification, the term "steam space" is used with the meaning defined in this patent specification, being a part of the pump chamber which is partly bounded by wall portions which extend at right angles to the direction in which the water is conveyed. The effective pump action in this coffee maker is achieved by means of the pump chamber with the steam space which results in the water passing fairly rapidly through the pump chamber. This can give rise to a problem in that the temperature of the water having passed through the pump chamber may be below the optimum value required for coffee making.

It is an object of the invention to provide a construction in which this unwanted lowering of water temperature is reduced.

According to the invention, there is

provided a coffee maker of the filter type having a heating plate for a collecting vessel of a filter device and underneath the heating plate a pump chamber provided with a steam space as hereinbefore defined, an outlet conduit connected to the pump chamber for conveying the water heated in the pump chamber to the filter device and a common heating element for the heating plate and the pump chamber, in which the heating element, heating plate and pump chamber are thermally connected to a thermally conductive body and a wall of a part of the outlet conduit adjoining the pump chamber is also thermally connected to said body.

In a preferred embodiment having a U-shaped heating element adjacent to which the pump chamber is located, the pump chamber contacts one of the legs of the U-shaped element and the portion of the element connecting the two legs, the other leg of the U-shaped element being in heat-transfer contact with a part of the outlet conduit adjoining the pump chamber over substantially the whole length of said other leg.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 is an elevation of a coffee maker,

Figure 2 is a bottom plan view of a heating plate, a pump chamber and a heating element, and

Figure 3 is a sectional view taken on the line III-III in Figure 2.

The coffee maker shown in Figure 1 contains a water reservoir 1 and a base 2. The base accommodates the heating plate, the pump chamber and the heating element which together form an assembly 3. An inlet conduit 4 connects the pump chamber with the reservoir 1 and an outlet conduit

5 connects the pump chamber to a discharge pipe 6. The water reaches a filter holder 8 containing the ground coffee, via a spout 7 of the discharge pipe 6. The filter holder 8 is located on a filter vessel 9 in which the coffee brew is collected. The base 2 has an opening at the top so that the filter vessel 9 can directly rest on the heating plate.

10 Figures 2 and 3 show details of the assembly 3 which comprises a heating plate 19 located above a pump chamber 11 and a heating element 10. The assembly 3 in this embodiment comprises a metal casting which acts as a thermally conductive body. The element 10 is substantially U-shaped and located in a U-shaped groove in said casting. The pump chamber 11 is partly surrounded by the heating element 10 and contacts a leg 12 and a connecting piece 13 of the element 10. A part of the pump chamber forms a steam space as described in the aforementioned patent specification. The pump chamber 11 is closed by an access plate 14 which is secured to the assembly 3 by means of a bolt 15.

The ends of the steam space are defined by wall portions, as already mentioned, but these wall portions are not visible in Figure 2 because they are located beneath parts of the pipe covered by the edges of the plate 14.

A part 17 of the outlet conduit 5 is located in a portion 16 of the assembly 3 and connects to the pump chamber 11. This portion 16 houses the leg 18 of the heating element. The leg 18 of the element is therefore in heat transfer contact with the parts 17 since the portion 16 enables a good transfer of heat to take place between the heating element and the water in the part 17 of the outlet conduit 5. The temperature of the water which has already been heated in the pump chamber is further raised when the water enters the part 17 of the outlet conduit until the optimum temperature for coffee filtration is attained. The extent to which the temperature of the water in the part 17 is increased is influenced *inter alia* by the length over which said part 17 is in heat transfer contact with the leg 18 of the heating element 10.

WHAT WE CLAIM IS:—

1. A coffee maker of the filter type having a heating plate for a collecting vessel of a filter device and underneath the heating plate a pump chamber provided with a steam space as hereinbefore defined, an outlet conduit connected to the pump chamber for conveying the water heated in the pump chamber to the filter device and a common heating element for the heating plate and the pump chamber, in which the heating element, heating plate and pump chamber are thermally connected to a thermally conductive body and a wall of a part of the outlet conduit adjoining the pump chamber is also thermally connected to said body.

2. A coffee maker as claimed in claim 1, having a U-shaped heating element adjacent to which the pump chamber is located, in which the pump chamber contacts one of the legs of the U-shaped element and the part of the element connecting the two legs, the other leg of the U-shaped element being in heat transfer contact with a part of the outlet conduit adjoining the pump chamber over substantially the whole length of said other leg.

3. A coffee maker as claimed in Claim 1 or 2, in which the heating element is located in a groove of said thermally conductive body.

4. A coffee maker as claimed in any one of Claims 1 to 3, in which the thermally conductive body is a metal casting.

5. A coffee maker as claimed in any one of Claims 1 to 4, in which the pump chamber is closed by an access plate.

6. A coffee maker as claimed in Claim 5, in which the access plate is secured by a bolt to the thermally conductive body.

7. A coffee maker substantially as hereinbefore described with reference to the accompanying drawings.

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COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of
the Original on a reduced scale.
SHEET 1

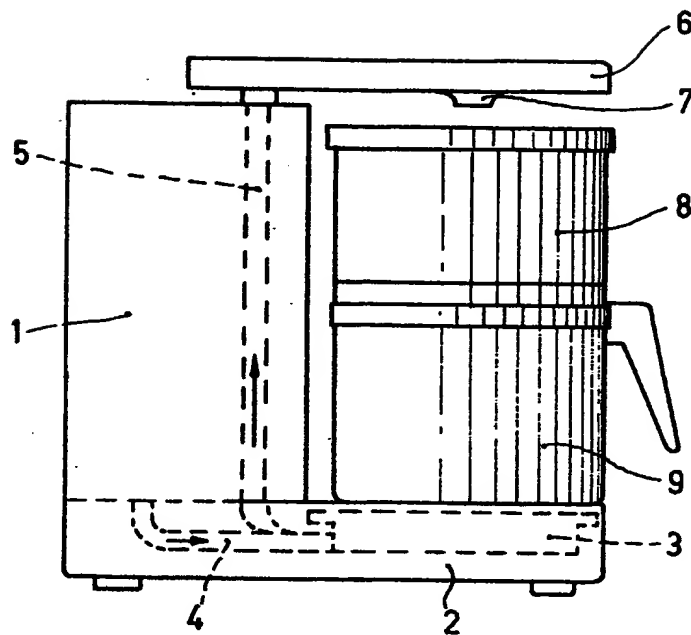


Fig. 1

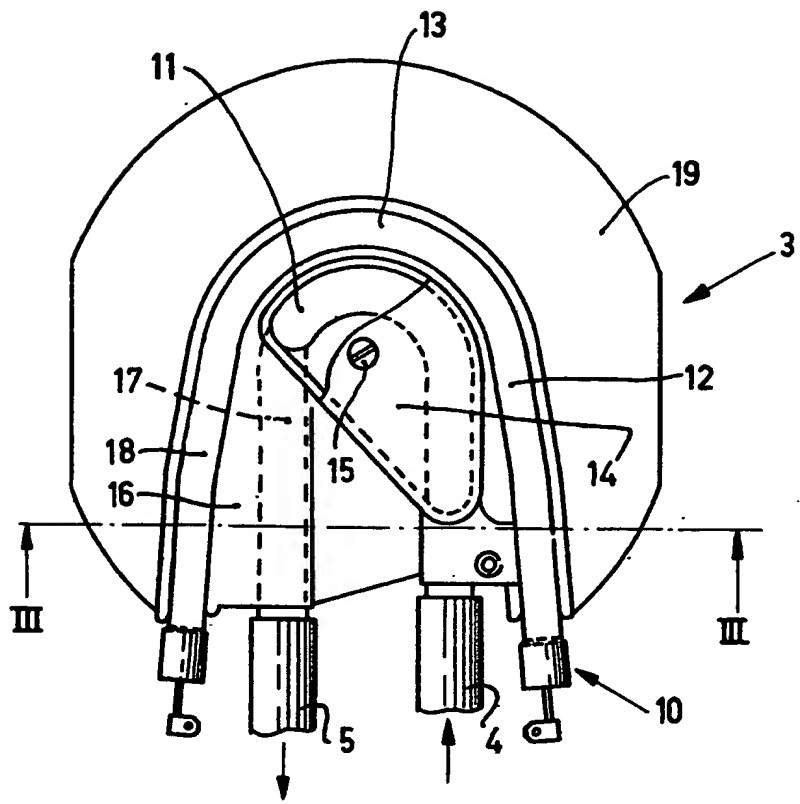


Fig. 2

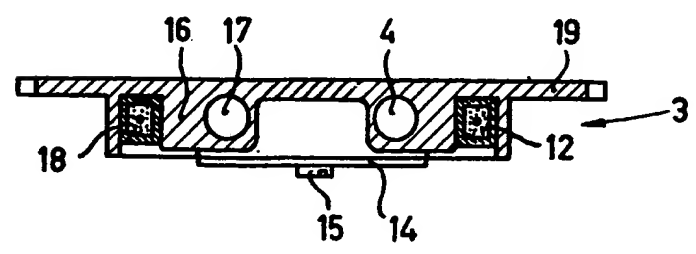


Fig. 3